WHAT IS CLAIMED IS:

1. A method for diagnosing a condition of a target tissue, comprising the steps of:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) sensing a returned electromagnetic radiation returned from the target tissue;

c.) determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods;

d.) combining the characteristics determined by the at least two spectroscopic methods, thereby decoupling biochemical changes from morphological changes in the target tissue; and

e.) determining a condition of the target tissue based on the combined determined characteristics.

2. The system of claim 1, wherein the at least two spectroscopic methods comprise fluorescence measurements and scattering or reflectance measurements.

3. The method of claim 1, wherein the at least two spectroscopic methods are selected from the group consisting of absorption measurements, scattering measurements, reflection measurements, polarization anisotropic measurements, steady state fluorescence measurements, and time resolved fluorescence measurements.

4. The method of claim 3, wherein the time resolved fluorescence measurements comprise at least one of phase modulation techniques, polarization anisotropic techniques and techniques that directly monitor the decay profile of fluorescent emissions.

5. The method of claim 1, wherein step b.) comprises simultaneously sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and excitation electromagnetic radiation that is scattered from the target tissue.

6. The method of claim 5, wherein step c.) comprises making intensity based measurements on both said electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

7. The method of claim 1, wherein step b.) comprises sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and then subsequently sensing excitation electromagnetic radiation that is scattered from the target tissue.

8. The method according to claim 7, wherein a critical timing window, which is defined as the time period between sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and subsequently sensing excitation electromagnetic radiation that is scattered from the target tissue, is not greater than approximately 0.25 seconds.

9. The method of claim 7, wherein step c.) comprises making intensity based measurements on both said electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

10. The method of claim 1, wherein step b.) comprises sensing electromagnetic radiation returned from a plurality of interrogation points distributed over the target tissue.

11. The method according to claim 10, further comprising a step of dividing the target tissue into a first set of field areas, wherein step c.) comprises determining characteristics of the returned electromagnetic radiation in each of said first set of field areas using at least two spectroscopic methods, step d.) comprises combining the characteristics determined by the at least two spectroscopic methods for each of said first set of field areas and step e.) comprises determining a condition of the target tissue by comparing the combined determined characteristics of each of said first set of field areas.

12. The method according to claim 11, further comprising a step of identifying visual characteristics of the target tissue, wherein the field areas are selected based on the identified visual characteristics of the target tissue.

13. The method according to claim 11, wherein the field areas are selected based on previously identified characteristics of the target tissue.

14. The method according to claim 13, wherein the previously identified characteristics of the target tissue comprise characteristics of the target tissue identified through previous testing of the target tissue using at least one of cytology, colposcopy and histopathology.

15. The method of claim 11, further comprising, after determining a condition of the target tissue by comparing the combined determined characteristics of each of said first set of field areas, re-dividing the target tissue into a second set of field areas, different from said first set of field areas and the determining characteristics of the returned electromagnetic radiation in each of said second set of field areas using at least two spectroscopic methods, combining the characteristics determined by the at least two spectroscopic methods for each of said second set of field areas and determining a condition of the target tissue by comparing the combined determined characteristics of each of said second set of field areas.

16. The method of claim 10, wherein the method is performed using an apparatus comprising an irradiation source, a detector and a processor, wherein the step of sensing electromagnetic radiation returned from a plurality of interrogation points comprises the steps of:

sensing electromagnetic radiation returned from the target tissue from a first subset of the plurality of interrogation points;

moving at least one of the apparatus and the tissue;

sensing electromagnetic radiation returned from the target tissue from a second subset of the plurality of interrogation points;

again moving at least one of the apparatus and the tissue; and

continuing this process until sensing has been peformed at all of the plurality of interrogation points.

17. The method of claim 1, further comprising a step of generating a map of conditions of different portions of the target tissue based on the combined determined characteristics.

18. The method of claim 1, further comprising a step of conducting a pattern recognition process to determine whether a pattern of conditions exists within the target tissue.

19. A system for determining a condition of a target tissue in a human or animal, comprising:

a electromagnetic radiation source for providing excitation electromagnetic radiation;

a device that couples the excitation electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation returned from the target tissue;

a processor configured to determine characteristics of the returned electromagnetic radiation using at least two spectroscopic methods, wherein the processor combines the characteristics determined by each of the at least two spectroscopic methods in order to decouple biochemical changes from morphological changes in the target tissue and determines a condition of the target tissue based on the combined determined characteristics.

20. The system of claim 19, wherein the at least two spectroscopic methods comprise fluorescence measurement methods and scattering or reflectance measurement methods.

21. The system of claim 19, wherein the at least two spectroscopic methods are selected from the group consisting of absorption measurements, scattering measurements, reflectance measurements, polarization anisotropy measurements, steady state fluorescence measurements and time resolved fluorescence measurements.

22. The system of claim 19, wherein the device that senses returned electromagnetic radiation is configured to simultaneously sense fluorescent radiation emitted by endogenous fluorophores in response to the excitation radiation and excitation electromagnetic radiation that is scattered from the target tissue.

23. The system of claim 22, wherein the processor makes intensity based measurements on both said fluorescent radiation emitted by endogenous fluorophores in response to the excitation radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

24. The system of claim 19, wherein the device that senses electromagnetic radiation is configured to first sense fluorescent radiation emitted by fluorophores in response to the excitation radiation and then subsequently sense excitation electromagnetic radiation that is scattered from the target tissue.

25. The system according to claim 24, wherein a critical timing window, which is defined as the time period between sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and subsequently sensing excitation electromagnetic radiation that is scattered from the target tissue, is not greater than approximately 0.25 seconds.

26. The system of claim 24, wherein the processor makes intensity based measurements on both said fluorescent radiation emitted by endogenous fluorophores in response to the excitation radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

27. The system of claim 19, wherein the device that senses electromagnetic radiation is configured to sense electromagnetic radiation returned from a plurality of interrogation points distributed over the target tissue.

28. The system according to claim 27, wherein the processor divides the target tissue into a first set of field areas, determines characteristics of the returned electromagnetic radiation in each of said first set of field areas using said at least two spectroscopic methods, combines the characteristics determined by each of said at least two spectroscopic methods for each of said first set of field areas and determines a condition of the target tissue in each of said first set of field areas based on the combined determined characteristics of the respective field areas.

29. The system according to claim 28, wherein the target tissue is divided into field areas according to previously identified characteristics of the target tissue.

30. The system according to claim 29, wherein the previously identified characteristics of the target tissue are visually identified characteristics of the target tissue.

31. The system according to claim 29, wherein the previously identified characteristics of the target tissue are characteristics of the target tissue identified through previous testing of the target tissue using at least one of cytology, colposcopy and histopathology.

32. The system of claim 28, wherein the processor is further configured to, after the processor determines a condition of the target tissue in each of the first set of field areas based on the combined determined characteristics of the respective field areas, divide the target tissue into a second set of field areas, different from the first set

of field areas; determine characteristics of the returned electromagnetic radiation in each of said second set of field areas using said at least two spectroscopic methods, combine the characteristics determined by each of said at least two spectroscopic methods for each of said second set of field areas and determine a condition of the target tissue in each of the second set of field areas based on the combined determined characteristics of the respective field areas.

33. The system of claim 27, wherein the device that senses electromagnetic radiation is movable to a plurality of pre-determined positions and is configured to sense electromagnetic radiation returned from a subset of the plurality of interrogation points at each pre-determined position.

34. The system of claim 19, wherein the processor is also configured to conduct a pattern recognition process to determine whether a pattern of conditions exists within the target tissue.

35. The system of claim 19, wherein the processor is also configured to create a map of determined conditions of different portions of a target tissue.

36. A method for diagnosing diseased tissue in a human or animal, comprising:

irradiating a target tissue with excitation electromagnetic radiation;

sensing a returned electromagnetic radiation returned from the target tissue;

determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods, thereby decoupling biochemical changes from morphological changes in the target tissue occurring due to disease; and

determining a condition of the target tissue based the determined characteristics.

37. A system for determining a condition of a target tissue in a human or animal, comprising:

an electromagnetic radiation source for providing excitation electromagnetic radiation;

a device that couples the excitation electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation returned from the target tissue; and

a processor configured to determine characteristics of the returned electromagnetic radiation using at least two spectroscopic methods, thereby decoupling biochemical changes from morphological changes in the target tissue occurring due to disease and determine a condition of the target tissue based on the determined characteristics.